

### **REMARKS**

Claim 12 has been amended. Claims 11-30 currently are pending. Claims 11, 13, 17, 19, 23, 25, 27 and 29 have been withdrawn from consideration.

The examiner rejected claims 12, 14-16, 18, 20-22, 24, 26, 28 and 30 under 35 USC § 103(a) as being unpatentable over Gottfried et al. (US 2,488,082) in view of Vedage (US 5,444,170).

Applicants note that (US 2,488,082) is Galitzenstein et al.

Applicants herein amend claim 12 so that it is now drawn to a **continuous** process for the synthesis of alcohols. This is now a positive limitation. Galitzenstein et al. nor Vedage et al., combined or taken individually teach or suggest carrying out the process continuously. Therefore, a *prima facie* case of obviousness has not been established. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Applicants discovered that it is advantageous to carry out the process continuously. This results in a much better space-time yield. The space-time yield which can be obtained with the process according to the present invention is about 20 times as high as the space-time yield according to Galitzenstein et al. Representative space-time yields according to Galitzenstein et al. and the present invention are calculated based on example 1 of Galitzenstein et al. and example 4 of the present invention.

For the reasons expressed above, it is urged that the prior art references cited by the examiner either singly or in combination fail to anticipate or suggest the present invention as defined by the amended claims. Accordingly, a *prima facie* case of obviousness has not been established by the examiner, and the rejection under 35 USC § 103 should be withdrawn.

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Respectfully submitted,  
KEIL & WEINKAUF

A handwritten signature in black ink, appearing to read 'D. Kim', written over the printed name.

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**IN THE CLAIMS:**

11. (withdrawn) A process for preparing at least one unsaturated alcohol (B), which comprises the steps (I) to (III) below:

(I) reaction of at least one alkali metal hydroxide or alkaline earth metal hydroxide with at least one alcohol (A) in at least one organic solvent (L) to give a mixture (G-I) comprising at least the alcohol (A), the solvent (L) and an alkoxide (AL);

(II) reaction of at least one carbonyl compound of the formula  $R-CO-R'$  with at least one alkyne of the formula  $R''-C\equiv C-H$  and the mixture (G-I) obtained in step (I) to give a mixture (G-II) comprising at least the alcohol (A), the solvent (L) and an unsaturated alcohol (B);

(III) distillation of the mixture (G-II) obtained in step (II) to give the alcohol or alcohols (B) and a mixture (G-III) comprising the solvent (L) and the alcohol (A), wherein the solvent (L) obtained in step (III) and the alcohol (A) obtained in step (III) are recycled as a mixture to step (I), wherein steps (I) to (II) are carried out continuously.

12. (currently amended) A process for preparing at least one hydrogenated alcohol (C), which comprises the steps (I) to (III') below:

(I) reaction of at least one alkali metal hydroxide or alkaline earth metal hydroxide with at least one alcohol (A) in at least one organic solvent (L) to give a mixture (G-I) comprising at least one alcohol (A), the solvent (L) and an alkoxide (AL);

(II) reaction of at least one carbonyl compound of the formula  $R-CO-R'$  with at least one alkyne of the formula  $R''-C\equiv C-H$  and the mixture (G-I) obtained in step (I) to

- give a mixture (G-II) comprising at least the alcohol (A), the solvent (L) and an unsaturated alcohol (B);
- (II') hydrogenation of at least one unsaturated alcohol (B) in the mixture obtained from step (II) to give a mixture (G-II') comprising at least one hydrogenated alcohol (C), the alcohol (A) and the solvent (L);
- (III') distillation of the mixture (G-II') obtained in step (II') to give the alcohol or alcohols (C) and a mixture (G-III') comprising the solvent (L) and the alcohol (A), wherein the solvent (L) obtained in step (III') and the alcohol (A) obtained in step (III') are recycled as a mixture to step (I), wherein steps (I) to (III') are carried out continuously.
13. (withdrawn) A process as claimed in claim 11, wherein the step (II) comprises the substeps (i) to (vi) below:
- (i) reaction of at least one carbonyl compound of the formula  $R-CO-R'$  with at least one alkyne of the formula  $R''-C\equiv C-H$  and the mixture (G-I) obtained in step (I) to give a mixture (M-i);
- (ii) hydrolysis of the mixture (M-i) obtained from substep (i) to give a multiphase mixture (M-ii) comprising at least one organic phase;
- (iii) separation of the organic phase or phases from the multiphase mixture (m-ii) obtained in substep (ii);
- (iv) extraction of the organic phase or phases separated off in step (iii);
- (v) neutralization of the organic phase or phases extracted in step (iv) to give a mixture (M-v) comprising at least one alkali metal salt or alkaline earth metal salt;

- (vi) separation of the alkali metal salt(s) or alkaline earth metal salt(s) from the mixture (M-v) obtained in substep (v) to give a mixture (G-II) comprising at least the alcohol (A), the solvent (L) and an unsaturated alcohol (B).
14. (previously presented) A process as claimed in claim 12, wherein the steps (II) comprises the substeps (i) to (vi) below:
- (i) reaction of at least one carbonyl compound of the formula  $R-CO-R'$  with at least one alkyne of the formula  $R''-C\equiv C-H$  and the mixture (G-I) obtained in step (I) to give a mixture (M-i);
  - (ii) hydrolysis of a mixture (M-i) obtained from substep (i) to give a multiphase mixture (M-ii) comprising at least one organic phase;
  - (iii) separation of the organic phase or phases from the multiphase mixture (M-ii) obtained in substep (ii);
  - (iv) extraction of the organic phase or phases separated off in step (iii);
  - (v) neutralization of the organic phase or phases extracted in step (iv) to give a mixture (M-v) comprising at least one alkali metal salt or alkaline earth metal salt;
  - (vi) separation of the alkali metal salt(s) or alkaline earth metal salt(s) from the mixture (M-v) obtained in substep (v) to give a mixture (G-II) comprising at least the alcohol (A), the solvent (L) and an unsaturated alcohol (B).
15. (previously presented) A process as claimed in claim 13, wherein the extraction in substep (iv) is carried out as a countercurrent extraction.

16. (previously presented) A process as claimed in claim 14, wherein the extraction in substep (iv) is carried out as a countercurrent extraction.
17. (withdrawn) A process as claimed in claim 11 which comprises the further step (IV):  
(IV) finishing the alcohol or alcohol B or C prepared in step (II) or in steps (II) and (II') and obtained in step (III) or in step (III').
18. (previously presented) A process as claimed in claim 12 which comprises the further step (IV):  
(IV) finishing of the alcohol or alcohols B or C prepared in step (II) or in steps (II) and (II') and obtained in step (III) or step (III').
19. (withdrawn) A process as claimed in claim 13 which comprises the further step (IV):  
(IV) finishing of alcohol or alcohols B or C prepared in step (II) or in steps (II) and (II') and obtained in step (III) or step (III').
20. (previously presented) A process as claimed in claim 14 which comprises the further step (IV):  
(IV) finishing of alcohol or alcohols B or C prepared in step (II) or in steps (II) and (II') and obtained in step (III) or step (III').

21. (previously presented) A process as claimed in claim 15 which comprises the further step (IV):
- (IV) finishing of alcohol or alcohols B or C prepared in step (II) or in steps (II) and (II') and obtained in step (III) or step (III').
22. (previously presented) A process as claimed in claim 16 which comprises the further step (IV):
- (IV) finishing of alcohol or alcohols B or C prepared in step (II) or in steps (II) and (II') and obtained in step (III) or step (III').
23. (withdrawn) A process as claimed in claim 11, wherein the radicals R and R' of the carbonyl compound of the formula R-CO-R' are identical or different and are straight-chain, branched or cyclic, saturated or unsaturated aliphatic radicals.
24. (previously presented) A process as claimed in claim 12, wherein the radicals R and R' of the carbonyl compound of the formula R-CO-R' are identical or different and are straight-chain, branched or cyclic, saturated or unsaturated aliphatic radicals.
25. (withdrawn) A process as claimed in claim 13, wherein the radicals R and R' of the carbonyl compound of the formula R-CO-R' are identical or different and are

straight-chain, branched or cyclic, saturated or unsaturated aliphatic radicals.

26. (previously presented) A process as claimed in claim 14, wherein the radicals R and R' of the carbonyl compound of the formula  $R-CO-R'$  are identical or different and are straight-chain, branched or cyclic, saturated or unsaturated aliphatic radicals.
27. (withdrawn) A process as claimed in claim 23, wherein the carbonyl compound of the formula  $R-CO-R'$  is acetone or methyl isobutyl ketone.
28. (previously presented) A process as claimed in claim 24, wherein the carbonyl compound of the formula  $R-CO-R'$  is acetone or methyl isobutyl ketone.
29. (withdrawn) An integrated process for preparing at least one unsaturated alcohol (B), which comprises the continuously operated steps (a) to (h) below:
  - (a) reaction of at least one alkali metal hydroxide or alkaline earth metal hydroxide with at least one alcohol (A) in at least one organic solvent (L) using the aqueous phase (P-d) obtained in step (d) to give a mixture (G-a) comprising at least the solvent (L), the alcohol (A) and an alkoxide (AL) and to give an aqueous phase (P-a) which is passed to step (e);
  - (b) reaction of at least one carbonyl compound of the formula  $R-CO-R'$  with at least one alkyne of the formula  $R''-C\equiv C-H$  and the mixture (G-a) obtained in step (a) to give a mixture (G-b) comprising at least one



unsaturated alcohol (B), where the reaction is preferably carried out in a reaction mixing pump;

- (c) hydrolysis of the mixture (G-b) from step (b) using the aqueous phase (P-e) obtained in step (e) to give a multiphase mixture (M-c) comprising at least one organic phase and at least one aqueous phase;
- (d) separation of the organic phase or phases from the multiphase mixture (M-c) obtained in step (c) to give at least one aqueous phase (P-d) which is recycled to step (a);
- (e) countercurrent extraction of the organic phase or phases separated off in step (d) using the aqueous phase (P-a) obtained in step (a) to give an aqueous phase (P-e) which is recycled to step (c);
- (f) neutralization of the organic phase or phases obtained in step (e) to give a mixture (G-f) comprising at least one alkali metal salt or alkaline earth metal salt and also at least the alcohol (A), the solvent (L) and the unsaturated alcohol or alcohols (B);
- (g) separation of the alkali metal salt(s) or alkaline earth metal salt(s) from the mixture (G-f) obtained in step (f) to give a mixture (G-g) comprising at least the alcohol (A), the solvent (L) and the unsaturated alcohol or alcohols (B);
- (h) distillation of the mixture (G-g) obtained in step (g) to give the unsaturated alcohol or alcohols (B), to give a mixture (M-h) comprising the solvent (L) and the alcohol (A) and to give a mixture (G-h) comprising small amounts of the unsaturated alcohol or alcohols (B), where the solvent (L) and the

alcohol (A) are recycled as a mixture to step (a) and the mixture (G-h) comprising small amounts of the unsaturated alcohol or alcohols (B) is recycled to step (g).

30. (previously presented) An integrated process for preparing at least one hydrogenated alcohol (C), which comprises the continuously operated steps (a) to (g) as claimed in claim 29 and also the continuously operated steps (g') and (h') which are carried out after step (g):
- (g') hydrogenation of the unsaturated alcohol or alcohols (B) in the mixture (G-g) obtained from step (g) to give a mixture (G-g') comprising at least the alcohol (A), the solvent (L) and at least one hydrogenated alcohol (C);
  - (h') distillation of the mixture (G-g') obtained in step (g') to give the hydrogenated alcohol or alcohols (C), to give a mixture (M-h') comprising the solvent (L) and the alcohol (A) and to give a mixture (G-h') comprising small amounts of the hydrogenated alcohol or alcohols (C), where the solvent (L) and the alcohol (A) are recycled as a mixture to step (a) and the mixture (G-h') comprising small amounts of the hydrogenated alcohol or alcohols (C) is recycled to step (g).--